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## **BUILDING A NEW AGRICULTURAL RESEARCH AND EXTENSION SYSTEM IN AFGHANISTAN: INITIAL THOUGHTS**

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### **Introduction**

Agricultural development is critical to the reconstruction of Afghanistan. Central to rebuilding the agriculture sector is the need for an effective agriculture research and extension system. Throughout the world, and in Afghanistan, agriculture research and extension is in transition – influenced by trends toward reduced government intervention in the economy, growth of the private sector and civil society, and globalization.<sup>1</sup> These changes and a range of other pressures are forcing a reexamination of public research and extension systems. The monopoly public services model for research and extension is obsolete in the more competitive, market-oriented climate of today's agriculture.<sup>2</sup>

Concurrently, with the changes in thinking on how to approach the development of agriculture research and extension, new business models for development assistance have also emerged that have important implications for the future of Afghanistan's agriculture sector. USAID's new Global Development Alliance approach enables alliance partners to bring their assets to bear to address jointly defined development challenges, thus achieving much more together that would not be possible for any individual partner.

This paper provides background information on the challenges facing the development of research and extension systems in Afghanistan, introduces the concept of the Global Development Alliance as a possible framework for bringing together partners interested in assisting with strengthening research extension systems, and discusses current international development concepts about how to structure new, and more innovative agriculture extension systems.

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<sup>1</sup> *Extension and Rural Development: Converging Views on Institutional Approaches.* Gary Alex et.al. Agriculture and Rural Development Discussion Paper 4, The World Bank. 2004.  
[http://inweb18.worldbank.org/ESSD/ardext.nsf/11ByDocName/ExtensionandRuralDevelopmentConvergingViewsonInstitutionalApproaches/\\$FILE/DiscussionPaper4Final.pdf](http://inweb18.worldbank.org/ESSD/ardext.nsf/11ByDocName/ExtensionandRuralDevelopmentConvergingViewsonInstitutionalApproaches/$FILE/DiscussionPaper4Final.pdf)

<sup>2</sup> Rivera, W. 2001. Whither Agricultural Extension Worldwide? Reforms and Prospects. In: Wolf, S. and Zilberman, D. (eds.), *Knowledge Generation and Technical Change: Institutional Innovation in Agriculture.* University of California, Berkeley.  
<http://www.sls.wau.nl/cis/ESEE/ESEE-papers/Full%20papers/rivera.pdf>

## **Background**

Agriculture dominates the Afghan economy, contributing an estimated 53% of gross domestic product and providing employment and livelihoods for about 80% of the population. However, 25 years of war and civil conflict and the recent severe prolonged drought have seriously affected Afghanistan's agriculture sector. Developing the agriculture sector is critical for economic growth and for tackling opium poppy cultivation.

The Government of Afghanistan recognizes that economic growth is a key factor for poverty reduction and that agriculture plays an important role in this process. Given the country's dependence on agriculture, the rate of recovery in the sector will largely determine the nation's overall rate of economic recovery and poverty reduction. Higher rates of growth in agricultural productivity are necessary to promote broad-based economic growth, reduce rural poverty, and conserve natural resources. Agricultural productivity growth is based largely on application of science, technology, and information, and needs to be provided through national agricultural research and extension systems. However, as Afghanistan moves forward on developing agricultural research and extension systems it can no longer rely on just traditional government systems, but must include all organizations and institutions that generate, share, import, and use agricultural knowledge and information.

Prior to 1979, Afghanistan's agriculture research system comprised 24 research stations, over 1,000 staff, 25 percent of which was technical research staff. However, this system is now largely dysfunctional as a result of widespread degradation of infrastructure and human capital. The agricultural extension system, which used to operate throughout the country with over 400 extension units, is in a similar state of disarray. Of 371 districts nationwide, only 136 have functioning extension units now. Even these 136 units need major renovations, as well as training for staff. Most staff currently on the payroll have little exposure to modern agricultural management practices. Capacity building needs to focus on updating technical skills, and developing new skills related to management, monitoring and evaluation, participatory approaches, and modern agribusiness.

Since 2003, USAID has been providing assistance to deliver new technologies and information to farmers and herders through its Rebuilding Agricultural Markets Program (RAMP), the Dairy Industry Revitalization Project implemented by Land O Lakes, the Participating Agency Services Agreement (PASA) with USDA, and through grants to Central Asia Development Group (CADG). More recently, extension related work is being supported through the Alternative Livelihoods Program (ALP) at the provincial and district level. Although these activities have not directly targeted the capacity strengthening needs of the Ministry of Agriculture, Animal Husbandry and Food (MAAHF), they have worked directly with farmers through privately contracted extension advisors, many of whom were previously employed by the MAAHF.

A USDA Extension Specialist<sup>3</sup>, recruited through the PASA with USAID, worked with the MAAHF in the summer of 2005 to develop a plan to develop the Agricultural Extension System in Afghanistan<sup>4</sup>. This included developing a plan for utilizing USDA PL-480 funds targeted for strengthening of the agriculture extension system. In January 2006, USDA approved the budget submitted by MAAHF for allocating the \$4 million provided under the USDA PL-480 program.

In the future, USAID will continue to support the development of a more effective agriculture extension system through its proposed follow-on program to RAMP, the continued work of the ALP in the AL provinces, the dairy development program, and other new activities, such as the proposed Global Livestock Collaborative Research Support Program (GL-CRSP), and the new Biodiversity Conservation Program implemented by Wildlife Conservation Society.

For policymakers concerned with agriculture extension and research in Afghanistan, three points are important. First, agriculture research is a fundamental building block for progress in agricultural production and food security. Second, rapid transmission to farmers of advances from research stations and experimental farms depends on the effective functioning of many actors along the “research impact pathway,” from researchers and policymakers to farmers and herders. Third, the farmer is the key to the whole system; in the end the decisions of hundreds of thousands of farmers in Afghanistan determine whether the new varieties and technologies are adopted, impacts registered and poverty reduced and livelihoods improved.

Future investments must seek to develop more sustainable institutional arrangements for providing knowledge and information services to rural people. The emerging view is that the farmer is a responsible entrepreneur, managing complex, agricultural and off-farm activities to maximize well-being within many constraints. Key to the concept of promoting agricultural knowledge is the realization that improving rural productivity, social equity, and competitiveness requires effective and efficient agricultural knowledge and information systems that link people and institutions to promote mutual learning and generate, share, and utilize agricultural-related technology, knowledge, and information. Such a system integrates farmers, agricultural educators, researchers, and extension workers to harness knowledge and information from various sources for better farming and improved livelihoods.

Information and communication technologies (ICTs) are rapidly transforming the face of agriculture throughout the world, including Afghanistan. In economic terms, information has become so critical that it needs to be recognized explicitly as a fourth production

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<sup>3</sup> This was Mark Holt, who worked in Afghanistan from May 17 to September 7, 2005.

<sup>4</sup> Mark Holt, 2005. Final Report: Capacity Building for Agricultural Extension for Afghanistan’s Ministry of Agriculture, Animal Husbandry and Food. Unpublished Report. USAID/Afghanistan.

factor in agriculture.<sup>5</sup> ICTs are the highways that can facilitate the trade and exchange of innovations to address pressing agricultural challenges.<sup>6</sup>

Rebuilding the agriculture sector in Afghanistan depends on continually improving existing agricultural practices and on developing innovations to improve productivity that will be adopted by farmers and herders. The challenges facing agriculture development today – providing food security for a growing Afghan population with an ever more limited natural resource base, rehabilitating rural infrastructure destroyed by years of conflict, and rebuilding the research and extension system when there is limited institutional capacity and a lack of well-trained Afghans, as well as the domination of the rural economy in many areas by opium poppy cultivation -- makes this challenge particularly pronounced.

Given the immense challenges in rebuilding Afghanistan's agricultural research and extension systems, new thinking and innovative approaches are needed to tackle the problem. New challenges also provide new opportunities for developing the role of research and extension systems in the future.

### **The Global Development Alliance Approach**

USAID's Global Development Alliance (GDA) is at the forefront of an unprecedented change in the global system of development assistance.<sup>7</sup> As a new business model, the GDA approach enables alliance partners – corporations, foundations, and NGOs – to bring their assets to bear to address jointly defined development challenges, thereby achieving together a solution that would not be possible for any individual partner. A public-private alliance in the mold of the GDA is a formal agreement between two or more parties to define and address a development problem. Alliance partners combine resources and share risks in pursuit of common objectives, while recognizing that each partner will have other objectives not shared by other members of the alliance. Alliances bring together the resources of USAID and partners to solve problems that exceed the capabilities of individual actors. Those resources are as diverse as the alliances themselves. In addition to cash, they include human capital, technology and intellectual property, market access, cutting-edge business practices, policy influence, in-country networks, and expertise in development programs. Because local ownership, leadership, and participation are important keys to success in development projects, alliance activities that involve local leaders and beneficiaries in design and implementation are most likely to be sustainable.

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<sup>5</sup> The traditional three factors of production are land, labor, and capital. Information has always been a fourth important factor, but the increasing intensity of information in developed country agriculture has made correct and timely information about customer needs, production technologies, and quality standards a key determinant of price, profitability, and sustainability.

<sup>6</sup> Winrock International. 2003. Future Directions in Agriculture and Information and Communication Technologies at USAID. Report prepared for USAID.  
[http://www.winrock.org/GENERAL/Publications/ag\\_ict.pdf](http://www.winrock.org/GENERAL/Publications/ag_ict.pdf)

<sup>7</sup> USAID. 2006. *The Global Development Alliance: Public-Private Alliances for Transformational Development*. USAID, Washington, DC.  
[http://www.usaid.gov/our\\_work/global\\_partnerships/gda/pdf/GDA\\_Report\\_Jan2006\\_Full.pdf](http://www.usaid.gov/our_work/global_partnerships/gda/pdf/GDA_Report_Jan2006_Full.pdf)

### **Evolution of Agriculture Research and Extension Approaches**

Promoting agriculture development by investing in research and extension is a well-established approach to getting new technologies and information to farmers. In the past, extension services, largely public, were equated with the transfer of agricultural production technology in pre-determined “packages”. Extension systems are now understood to be much broader and more diverse, including public and private sector and civil society institutions that provide a broad range of services (advisory, technology transfer, training, promotional, and information) on a wide variety of subjects (agriculture, marketing, social organization, health and education) needed by rural people to better manage their agricultural systems and livelihoods.<sup>8</sup> Meanwhile, new and emerging priorities promise to shape extension in the future. International leaders and national policymakers responsible for directing extension will find themselves called upon to consider, along with extension’s commitment to agricultural advancements, its role in the development of rural economies, social equity, and the protection of the environment. New responsibilities will demand a more inclusive paradigm for extension, one that recognizes extension’s role in educating consumers and retailers as well as producers.<sup>9</sup>

The thinking and practice about the ways in which agricultural research and extension should be organized and which elements need to be included has constantly changed in recent decades<sup>10</sup>. A number of different frameworks have been promoted, as the basis for investments in agriculture technology development. In the 1950s and 1960s, the focus was on building public sector research departments and institutes and extension services. This broadened with the National Agricultural Research System (NARS) approach of the 1980s, the Agricultural Knowledge and Information System (AKIS) approach in the 1990s, and the recently designated Agricultural Innovation System (AIS) approach.

The public sector institutional model (which was the model introduced into Afghanistan in the 1960s and 1970s and the model that many Afghans still believe in) gave way to more pluralistic systems models, as the inefficiencies within the public sector and the potentials of private sector organizations became more well-known. The NARS approach emphasizes capacity strengthening of national research institutions and also in conjunction with its companion approach, the National Agricultural Extension System (NAES) promotes technology transfer and extension. AKIS has further developed into AKIS/RD, or Agricultural Knowledge and Information Systems for Rural Development and stresses linkages among the three main knowledge institutions of research, extension and education. Meanwhile, the international development community is in the process of promoting the newly conceived framework for conceptualizing and analyzing the way innovation works. This framework, the Agricultural Innovation System concept (AIS),

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<sup>8</sup> Investments in Agricultural Extension and Information Systems. *Agriculture Investment Sourcebook*. The World Bank. 2003. [http://www-esd.worldbank.org/ais/Module03/pdf/mod\\_03\\_00.pdf](http://www-esd.worldbank.org/ais/Module03/pdf/mod_03_00.pdf)

<sup>9</sup> Rivera, W. 2001. Ibid.

<sup>10</sup> Much of the information in this section is taken directly from a recent paper by William Rivera, et.al. *Enabling Agricultural Development: The Evolution and Promise of Agricultural Knowledge Systems*. <http://www.agnr.umd.edu/users/rivera/Enabling.pdf>

places emphasis on “interconnected institutions that create, store and transfer the knowledge, skills and artifacts that define new technologies”.

An innovation system perspective (rather than the more limited NARS and AKIS system concepts) may help us to better understand and analyze the various participants in an innovative process that are jointly responsible for its ultimate outcome and impact.<sup>11</sup> While there is the need for an innovation system perspective that understands and analyzes the various participants in an innovative process, the prior knowledge system concepts (i.e., NARS, NAES, and AKIS) continue to provide conceptual value, insightful perceptions and a pragmatic basis for enabling agricultural development.

AIS emphasizes “agricultural” innovations and goes beyond previous knowledge system concepts by incorporating the goals of current reform measures, such as political decentralization, public sector alliances with the private sector, enabling the private sector, advancing consensus approaches to development, and promoting demand-driven services. AIS also views innovation as “the transformation of an idea into a new or improved product introduced on the market or a new or improved operational process used in industry and commerce or into a new approach to a social service.” Thus, technological innovation is seen to involve more than research and development; it also entails the workings of the marketplace. While the notion of advancing the development and diffusion of innovations is not new, agriculture knowledge system success depends on innovations being disseminated, adopted and practiced by farmers. AIS also stresses decentralized, demand-driven approaches and broad stakeholder participation in the control, support and implementation of the agricultural technology agenda. AIS differs from previous frameworks by drawing attention not only to the need for innovation but also to the pluralistic involvement of different institutions in agriculture research and extension.

The effectiveness of an agricultural knowledge (innovation) system will depend on four main elements:

1. The *political will* to promote agriculture in general and agricultural knowledge systems more specifically.
2. An *institutional environment* that is conducive to the flow of knowledge, to collaboration, experimentation and implementation of innovations.
3. A *well articulated demand for new knowledge and technology*. Producers, traders and others must be able to express their demand and must be in a capacity to adapt and adopt new knowledge and technology.
4. The *effective supply of new knowledge and technology*, from the public research system, but also from other sources, such as indigenous knowledge, private sector research and transfers from abroad.

An agricultural knowledge (innovation) system will be effective to the extent that these four elements work in harmony. If research produces lots of new knowledge, but results are not used, the investments in the research system are in vain. If demands for new

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<sup>11</sup> William Rivera, et.al. Ibid.

technologies are not recognized, it is hard to see how the right type of innovations can be generated. And if there is no collaboration and interaction it is difficult to expect that practical improvements will result from science-based knowledge.

If the four elements are strengthened in a balanced and integrated fashion, agricultural innovation may be sped up and may be obtained at higher rates of efficiency. The results will then likely be: (1) the supply of new knowledge and technology based more on demand; (2) the collaborative development of new knowledge and technologies and increased practical application potential; (3) greater attention to non-research based strategies such as creative imitation; and (4) the improved flow of new knowledge and technologies towards potential users.

To realize these gains, the innovation system concept must be transformed from an analytical concept into a workable operational concept, from analysis and evaluation into implemented mechanisms to strengthen agriculture innovation. AIS institutional mechanisms can then contribute to fostering the integration of research and education systems, developing public-private alliances, developing and strengthening of farmer associations, establishing technology transfer units, building decentralized regional innovation centers, or implementing new governance models for research and extension.

In the final analysis, an operational AIS system, consisting of comprehensive knowledge systems, brings together the merits of fostering:

- A pluralistic National Agricultural Research System (NARS) and a pluralistic National Agricultural Extension System *that builds capacity*;
- A strategically aligned Agricultural Knowledge and Information System for Rural Development (AKIS/RD) *that increases coordination*; and
- An Agricultural Innovation System of interconnected public and commercial institutions *that create, store, and transfer the knowledge, skills, and artifacts which define new technologies for innovation.*

Capacity strengthening, system coordination, and the interconnectedness of public and commercial institutions to promote agricultural innovations are the fundamental elements of a comprehensive agricultural knowledge system, essential though not sufficient, for the advancement of agricultural development. The systems described above are frameworks. Some of them have been, and are being implemented –e.g., the NARS and the AKIS/RD. The AIS innovation system proposes to bring together all actors into a country-wide system that introduces new technologies, practices, methods and techniques into the agricultural arena – aimed specifically at advancing the livelihoods of farmers and farm families. These frameworks underline the value of knowledge, learning and the systems that promote knowledge and learning.

Unlike the NARS and AKIS/RD approaches, AIS remains a conceptual notion but one that holds promise for advancing and improving knowledge systems. It presumably includes capacity building and strengthening among the various institutional actors involved and also their coordination. And, it also presumably includes investments in

programs for strengthening the knowledge and skills of farmers within the context of the AIS innovation system.

### **Conclusion**

An effective agriculture extension system will need to provide a broad range of services (advisory, technology transfer, training, and information) on a wide variety of actions (agriculture, marketing and social organization) needed by rural people in Afghanistan so that they can better manage their agricultural systems and livelihoods. Future investments in agriculture development will also require more sustainable institutional arrangements for providing knowledge and information services to Afghan farmers. For this to happen, both the public and private sectors will need to assume new roles and responsibilities.

The new concepts described above provide valuable insights for policymakers in Afghanistan as the country moves forward with developing a modern, market-led agriculture sector. Like other developing countries, Afghanistan needs to modernize its agricultural economy, making the best use of new ideas, new technologies, and new information. Growth in agricultural productivity, which will drive overall economic growth, must be based on new applications of science, technology, and information. Adoption of some of the latest conceptual ideas on transforming agricultural knowledge systems, along with enabling policies, will provide a more fertile environment for large-scale investments in agriculture that are needed to rebuild the agriculture sector.